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MAR 0 4 2004
PATENT & TRADEMARK OFFICE

Docket No. 3203534002/7036669001 CIT 3777

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of
Deniz K. Armani, *et al.*

Serial No.: 10/678,354

Filed: October 2, 2003

For: ULTRA-HIGH Q MICRO-RESONATOR AND METHOD OF FABRICATION

Group Art Unit: 2872

Examiner: Not-Yet-Assigned

Certificate of Mailing Under
37 C.F.R. § 1.8

Date of Deposit: March 1, 2004

I hereby certify that this correspondence and all attachments are being deposited with the United States Postal Service as first class mail on the date indicated above in an envelope addressed to the Commissioner for Patents, PO Box 1450, Alexandria, Virginia 22313-1450

Karen Wuerfel

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22323-1450

Sir:

In accordance with 37 C.F.R. § 1.56, the references listed on the attached forms PTO/SB/08A/B are being brought to the attention of the Examiner for consideration in connection with the examination of the above-identified patent application. The Examiner is requested to make this document of record.

I. Timing of the Information Disclosure Statement:

This Information Disclosure Statement is filed:

☐ With the new patent application submitted herewith (37 C.F.R. § 1.97(a)).

☐ Within three months after the filing date of the application or within three months after the date of entry of the national stage of a PCT application as set forth in 37 C.F.R. § 1.491.

☒ Before the mailing date of a first Office action on the merits. In the event, however, that an Office Action has crossed in the mail with this Information Disclosure Statement, the Commissioner is hereby authorized to charge Deposit

Account No. 50-2518 for any fees required pursuant to
37 C.F.R. §§ 1.17(p) or 1.17(i)(1).

This Information Disclosure Statement is filed:

☐ After the first Office Action and more than three months after the application's filing date; or PCT national stage date of entry filing but, as far as is known to the undersigned, prior to the mailing date of either a final rejection or a notice of allowance, whichever occurs first, and the Commissioner is hereby authorized to charge Deposit Account No.[ ] for the fee ($180) set forth in 37 C.F.R. § 1.17(p) and any additional required fees.

This Information Disclosure Statement is filed:

☐ After the mailing date of either a final rejection or a notice of allowance, whichever occurred first, and is accompanied by the fee ($180.00) set forth in 37 C.F.R. § 1.17(i)(1) and a certification as specified in 37 C.F.R. § 1.97(e), as checked below. This document is to be considered as a petition requesting consideration of the Information Disclosure Statement.

The undersigned certifies that:

☐ Each item of information contained in the Information Disclosure Statement was first cited in any communication mailed from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this information disclosure statement.

☐ No item of information contained in this information disclosure statement was cited in a communication mailed from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

II. Copies of the Cited Items:

☐ Copies of the items listed on the attached form PTO/SB/08B is enclosed.

☒ Copies of only the following items listed on the attached Forms PTO/SB/08A are enclosed:

1. Patent No. FR 2,703,473
2. Patent No. JP 5-203826
3. Patent No. WO 98/05995
4. "Quantum boxes as active probes for photonic microstructures; The pillar microcavity case".
5. "Ultimate Q of optical microsphere resonators".
6. "High Q measurements of fused-silica microspheres in the near infrared".
7. "Observance of critical coupling in a fiber taper to a silica-microsphere whispering-gallery mode system".
8. "Ultralow-threshold Raman laer using a spherical dielectric microcavity".
9. "High-Q wet etched GaAs microdisk cavities".
10. "Quantum dot lasers using high-Q microdisk cavities".
11. "Fiber-coupled microsphere laser".
12. "Whispering-Gallery Mode Microdisk Lasers".
13. "Very low threshold whispering-gallery mode microsphere laser".
14. "Microdisk tunable resonant filters and switches".
15. "Polymer Micro-Ring Filters and Modulators".
16. "Vertically coupled InP microdisk switching devices with electro absorptive active regions".
17. "Critical coupling and its control in optial waveguide-ring resonator systems"
18. "Proposed N-wavelength M-fiber EDM cross connect switch using active microring resonators".
19. "An eight-channel add-drop filter using vertically coupled micoring resonators over a cross grid".
20. "Vertically coupled glass microring resonator channel dropping filters".
21. "Resonant coupler-based tunable add-after-drop filter in silicon oxynitride technology for WDM metworks".
22. "Micoring resonator channel dropping filters"
23. "Parallel-cascaded semiconductor micoring resonators for high-order and wide-FS filters".
24. "Box-like filter response and expansion of FSR by a vertically tripe coupled microrin resonator filter".
25. "Sensor based on an integrated optical shift of a resonant microcavity".
26. "Protein detection by optical shift of a resonant microcavity".
27. "Compact fibber-compatible, cascaded Raman laser".
28. "Inhibited Spontaneous Emission".
29. "Fiber-coupled Erbium Microlasers on a chip".
30. "Fabrication and coupling to planar high-Q silica disk microcavities".
31. "Gain functionalization of silica microresonators".

32. “Fused-silica monolithic total-internal-reflection resonator”.
33. “Phase-matched excitation of whispering-gallery mode resonances by a fiber taper”.
34. “Universal relations for coupling of optical power between microresonators and dielectric waveguides”.
35. “Wavelength Switching and Routing Using Absorption and Resonance”.

☐ Copies of the items listed in the attached Form PTO/SB/08 are not supplied because they were previously cited by or submitted to the Patent Office in a prior Application No. __________ filed ______________ and relied upon in this application for an earlier filing date under 35 U.S.C § 120.
See 37 C.F.R. § 1.98(d).

☐ Copies of those items which are marked with an asterisk (**) in the attached Form PTO/SB/08A were cited in a foreign examination report in a related case. A copy of the search report and the cited references not already of record in this application are attached hereto.

III. Concise Explanation of Relevance:

☒ A concise explanation of relevance of the item listed on form PTO/SB/08B is not given.

☐ A concise explanation of relevance of [some of] the items listed on Form PTO/SB/08A is in the form of an English language copy of a Search Report from a foreign patent office, issued in a counterpart application, which refers to the relevant portions of the references (copy attached).

IV. Related Applications:

☒ Applicants bring to the Office’s attention the following related, co-pending application(s): PCT App. No. PCT/US03/31727, filed October 2, 2003.

V. Conclusion:

Citation of the above documents shall not be construed as:

1. an admission that the documents are necessarily prior art with respect to the instant invention;

2. a representation that a search has been made, other than as described above; or
3. an admission that the information cited herein is, or is considered to be, material to patentability as defined in § 1.56(b).

It is respectfully requested that the Examiner indicate consideration of the cited references by returning a copy of the attached form PTO/SB/08B with initials or other appropriate marks. The Commissioner is hereby authorized to charge Deposit Account No. 50-2518, billing reference number: 3203534002/7036669001/CIT 3777 for any additional fees required in connection with the filing of this Information Disclosure Statement.

Respectfully submitted,

BINGHAM MCCUTCHEN LLP

Dated: March 1, 2004

By: ______________________
Gary D. Lueck
Registration No. 50,791

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PTO/SB/08a (08-03)
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 3

Complete if Known	
Application Number	3203534002
Filing Date	October 2, 2003
First Named Inventor	Deniz K. Armani
Art Unit	2872
Examiner Name	Not Yet Assigned
Attorney Docket Number	3203534002/CIT 3777

U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No.[1]	Document Number Number - Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	US- 3,589,794	06-29-1971	Marcatili	
	2	US- 3,760,297	09-18-1973	Thompson	
	3	US- 4,282,499	08-04-1981	DeFonzo	
	4	US- 4,695,121	09-22-1987	Mahapatra, et al.	
	5	US- 5,343,490	08-30-1994	McCall	
	6	US- 5,878,070	03-02-1999	Ho, et al.	
	7	US- 6,052,495	04-18-2000	Little, et al.	
	8	US- 6,078,605	06-20-2000	Little, et al.	
	9	US- 6,101,300	08-08-2000	Fan, et al.	
	10	US- 6,222,964	04-24-2001	Sadot, et al.	
	11	US- 2003/0021518	01-30-2003	Simirnov, et al.	
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] - Number[4] - Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
	12	PCT WO 98/05995	02-12-1998	Sadot, et al.		
	13	FR 2 703 473	10-07-1994	Marko		
	14	JP 05203826 A	08-13-1993	Ito		

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6] Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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PTO/SB/08B (10-01)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet	2	of	3

Complete if Known

Application Number	**10/678,354**
Filing Date	**October 2, 2003**
First Named Inventor	**Deniz K. Armani**
Art Unit	**2872**
Examiner Name	**Not Yet Assigned**
Attorney Docket Number	**3203534002/CIT 3777**

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher city and/or country where published	T[2]
	1	GERARD, J. M., et al. "Quantum boxes as active probes for photonic microstructures: The pillar microcavity case" *Applied Physics Letters* 69, 449-451 (1996).	
	2	GORODETSKY, M. L., et al. "Ultimate Q of optical microsphere resonators" *Optics Letters* 21, 453-455 (1996).	
	3	VEMOOY, D. W., et al. "High-Q measurements of fused-silica microspheres in the near infrared" *Optics Letters* 23, 247-249 (1998).	
	4	CAI, M., et al., "Observation of critical coupling in a fiber taper to a silica- microsphere whispering-gallery mode system" *Physical Review Letters* 85, 74-77 (2000).	
	5	SPILLANE, S. M., et al., "Ultralow-threshold Raman laser using a spherical dielectric microcavity" *Nature* 415, 621-623 (2002).	
	6	GAYRAL, B. et al., "High-Q wet-etched GaAs microdisks containing InAs quantum boxes" *Applied Physics Letters* 75, 1908-1910 (1999).	
	7	MICHLER, P. et al., "Quantum dot lasers using high-Q microdisk cavities" *Physica Status Solidi B-Basic Research* 224, 797-801 (2001).	
	8	CAI, M., et al., "Fiber-coupled microsphere laser" *Optics Letters* 25, 1430-1432 (2000).	
	9	McCALL, S. L., et al., "Whispering-Gallery Mode Microdisk Lasers" *Applied Physics Letters* 60, 289-291 (1992).	
	10	SANDOGHDAR, V., et al., "Very low threshold whispering-gallery-mode microsphere laser" *Physical Review A* 54, R1777-R1780 (1996).	
	11	DJORDJEV, K., et al., "Microdisk tunable resonant filters and switches" *Ieee Photonics Technology Letters* 14, 828-830 (2002)	
	12	RABIEI PAYAM, W. H. S., et al., "Polymer Micro-Ring Filters and Modulators" *Journal of Lightwave Technology* 20, 1968-1975 (2002).	
	13	DJORDJEV, K., Choi, et al., "Vertically coupled InP microdisk switching devices with electroabsorptive active regions" *Ieee Photonics Technology Letters* 14, 1115-1117 (2002).	
	14	YARIV, A. "Critical coupling and its control in optical waveguide-ring resonator systems" *Ieee Photonics Technology Letters* 14, 483-485 (2002).	
	15	SOREF, R. A., et al., "Proposed N-wavelength M-fiber WDM crossconnect switch using active microring resonators" *Ieee Photonics Technology Letters* 10, 1121-1123 (1998).	
	16	CHU, S. T., et al., "An eight-channel add-drop filter using vertically coupled microring resonators over a cross grid" *Ieee Photonics Technology Letters* 11, 691-693 (1999)	
	17	LITTLE, B. E., et al., "Vertically coupled glass microring resonator channel dropping filters" *Ieee Photonics Technology Letters* 11, 215-217 (1999)	
	18	OFFREIN, B. J., et al.., "Resonant coupler-based tunable add-after-drop filter in silicon-oxynitride technology for WDM networks" *Ieee Journal of Selected Topics in Quantum Electronics* 5, 1400-1406 (1999)	

Sheet 3\	of	3	Attorney Docket Number	3203534002

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher city and/or country where published	T[2]
	19	LITTLE, B. E., et al., “Microring resonator channel dropping filters” *Journal of Lightwave Technology* 15, 998-1005 (1997)	
	20	Grover, R., et al., “Parallel-cascaded semiconductor microring resonators for high- order and wide-FSR filters” *Journal of Lightwave Technology* 20, 872-877 (2002)	
	21	YANAGASE, Y., et al., “Box-like filter response and expansion of FSR by a vertically triple coupled microring resonator filter” *Journal of Lightwave Technology* 20, 1525-1529 (2002)	
	22	KRIOUKOV, E., et al., “Sensor based on an integrated optical microcavity” *Optics Letters* 27, 512-514 (2002).	
	23	VOLLMER, F., et al., “Protein detection by optical shift of a resonant microcavity”	
	24	BUMKI, M., et al., "Compact, fiber-compatible, cascaded Raman laser" *Optics Letters*, vol. 28, No. 17, September 2003	
	25	KLEPPNER, D., “Inhibited Spontaneous Emission” *Physical Review Letters* 47, 233-236 (1981).	
	26	YANG, L., et al., "Fiber-coupled Erbium Microlasers on a chip" *Applied Physics Letters*, vol. 83, No. 5, 825-826, August 2003.	
	27	KIPPENBERG, S. M., et al., "Fabrication and coupling to planar high-Q silica disk microcavities" *Applied Physics Letters*, vol. 83, No. 4, 797-799, July 2003.	
	28	YANG, L., et al., "Gain functionalization of silica microresonators"	
	29	SCHILLER, S., et al., “Fused –silica monolithic total-internal-reflection resonator” *Optics Letters*, vol. 17, No. 5, 378-380 March 1992	
	30	KNIGHT, J.C., “Phase-matched excitation of whispering-gallery-mode resonances by a fiber taper“ *Optics Letters*, vol. 22, No. 15, 1129-131 Aug. 1997	
	31	YARIV, A., “Universal relations for coupling of optical power between microresonators and dielectric waveguides” *Electronics Letters,* vol. 36, No. 4, 321-322 Feb. 2000	
	32	LITTLE, B.E., et al., “Wavelength Switching and Routing Using Absorption and Resonance” *IEEE Photonics Technology Letters*, vol. 10, No. 6, 816-818 June 1998	
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Examiner's Signature		Date Considered	

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] Applicant's unique citation designation number (optional). [2] Applicant is to place a check mark here if English language Translation is attached.

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